

REMARKS

This paper is in response to the office action mailed August 6, 2003. Claims 1-3, 5-15, and 17-19 remain under consideration in the application. Claims 1, 14, and 19 have been currently amended. Claims 4, 16, and 20 have been cancelled. No new matter has been added. Reconsideration and further examination of the application is respectfully requested.

The invention relates to a motion control system comprising a stepper motor mechanically coupled to a DC motor, and operated in various modes. A scanner incorporating such a motion control system is claimed, as well a method of motion control.

In the claims:

Claims 1-20 have been rejected under 35 USC 103(a) as being unpatentable over Müller (U.S. Pat. No. 6,201,361) in view of Windhorn (U.S. Pat. No. 5,880,537), Barrett (U.S. Pat. No. 5,627,438), and Dunfield (U.S. Pat. No. 5,633,568). Each of the claim rejections is discussed in turn.

Claim 1 has been amended to include the limitation that the motion control system is operated with only one of the motors providing motive power and the other motor de-energized. The examiner relies on Barrett for disclosing "motors being used one at a time" (paper 5, page 2). However, in establishing a *prima facie* case of obviousness, "[i]t is insufficient that the prior art disclosed the components of the patented device, either separately or used in other combination; there must be some teaching, suggestion, or incentive to make the combination made by the inventor." *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 U.S.P.Q.2d 1321 (Fed. Cir.), *cert. denied*, 111 S. Ct. 296 (1990). The examiner has not pointed out any motivation for combining Barrett with the other cited references, and thus has not made out a *prima facie* case of obviousness. Furthermore, the present invention is directed to solving a different problem than is Barrett. Barrett relates to with vehicle propulsion, and especially energy efficiency in vehicle propulsion (Abstract, column 3, lines 7-67). By contrast, applicant's invention provides a motion control system that can operate with improved speed and accuracy as compared with a single-motor system. (page 5, lines 3-6; page 6, lines 1-3; page 6, lines 6-7) In light of the

lack of motivation to combine the references cited by the examiner and the direction of the two inventions to different problems, applicant believes claim 1 to be allowable.

Claims 2 and 3 depend from claim 1 and add further limitations, and are thus also believed allowable.

Claim 5 also depends from claim 1 and adds further limitations, and is thus believed allowable. Furthermore, the cited references do not disclose all of the limitations of claim 5. In order to establish a *prima facie* case of obviousness, "the prior art references (or references when combined) must teach or suggest all of the claim limitations. (MPEP 2143)

Applicant's claim recites circuitry that senses back EMF signals from the stepper motor and provides position-indicating signals to the electronic control module. The examiner relies on Dunfield to show that "bemf of spindle motor is coupled to voice coil mechanism to assist in positioning." However, Dunfield does not provide position-indicating signals. In Dunfield, back EMF from a spindle motor provides power for affecting the position of an actuator during power-down of a disk drive, but no information about the position of either the spindle motor or the actuator is generated. (Abstract, and column 1, lines 42-47) Thus, the cited references, even in combination, do not teach or disclose all of the limitations of claim 5, and claim 5 is believed allowable.

Claim 6 depends from allowable claim 5 and adds further limitations, and is thus believed allowable.

Applicant respectfully traverses the rejection of claim 7. Claim 7 recites a scanner having two coupled motors and a scanning mechanism coupled to at least one of the motors. None of the cited references teaches or discloses a scanning mechanism, and thus the examiner has not made out a *prima facie* case of obviousness. Claim 7 is therefore believed allowable.

Claim 8 depends from claim 7 and adds a further limitation, and is thus also believed allowable. Specifically, claim 8 recites scanning means for providing relative motion between an original and the scanning mechanism. None of the cited references teaches or discloses such scanning means, and claim 8 is believed allowable on this additional basis.

Claims 9-13 depend from allowable claim 8 and add further limitations, and are therefore also believed allowable.

Claim 14 has been amended so that it claims a method of motion control comprising energizing only one of coupled DC and stepper motors. As explained in the discussion of

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claim 1 above, the examiner has not made out a *prima facie* case of obviousness, even though Barrett is cited to show "motors being used one at a time". The examiner has not pointed out any incentive or motivation for combining the references cited, and therefore claim 14 is believed allowable over the cited references.

Claims 15 and 17 depend from allowable claim 14 and add further limitations, and are thus also believed allowable.

Claim 18 depends from allowable claim 14 and adds further limitations, and is believed allowable. In addition, the limitations added in claim 18 are not taught or disclosed in the cited references. Specifically, claim 18 recites sensing back EMF signals from the stepper motor and determining the position of the motors from the back EMF signals. As explained in the discussion of claim 5 above, none of the cited references discloses determining the position of the motors from the back EMF signals and thus the examiner has not made out a *prima facie* case of obviousness. Claim 18 is therefore believed allowable over the cited references.

Similarly, the cited references, singly or in combination, do not teach or suggest all of the limitations of claim 19, and therefore claim 19 is believed allowable. Specifically by way of example, none of the cited references teaches means for determining the positions of the motors from the back EMF signals.

The examiner has made of record but not relied upon Journey (U.S. Pat. No. 4,301,397), Elger (U.S. Pat. No. 4,030,006), and Abbot (U.S. Pat. No. 3,658,156), and Mitsui, et al. (U.S. Pat. No. 3,687,235). These references, taken singly or in combination, do not teach or suggest all of the elements of applicant's claims.

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Applicant believes this application is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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